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ABSTRACT

This report presents a preliminary series of investigations dealing with the detection of populations at psychological risk. The investigation relies primarily on the variable of vulnerability, as defined empirically by self-esteem, psychological discomfort, and social skills. Two vulnerability groups, high (HV) and low(LV) are compared on their psychophysiological and self-reported reactions to environmental stress as predictors of potential maladjustment. Finally, the description of a behavioral program for preventing the onset of disorder is presented. The techniques described were selected because of their specific relevance to those skill deficits identified in this particular group of high-risk adolescents. (Author)

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Intervention Strategies for Populations at Risk: A Behavioral Approach to Prevention

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Community psychologists and other mental health professionals have raised serious doubts about the effectiveness of traditional treatment approaches derived from the "medical model". Practitioners following this model have often failed to provide empirical evidence for the usefulness of their clinical interventions, both diagnostic (Arthur, 1969; Goldfried & Kent, 1972; Mischel, 1973) and therapeutic (Bandura, 1969; Bergin, 1966; Paul, 1966). Given the current demands made upon mental health professionals, it is unlikely that the needs of society will be met unless more rapid and effective alternatives to mental health care are developed. One obvious endeavour meriting serious consideration is the implementation of programs aimed at preventing the onset of behavior disorders. While it is easy to agree on the desirability of such an approach (Caplan, 1964; Lemkau, 1965), there have been few attempts to provide systematic interventions derived from a preventive paradigm (Cowen, 1973). Even less has been done to submit preventive strategies to experimental investigation (Kessler & Albee, 1975; Poser & King, 1975; Roen, 1971).

Recent advances in experimental clinical psychology, and more particularly, behavioral psychology, may provide an appropriate intervention strategy applicable to individuals identified as susceptible to behavior pathology (Henderson, Montgomery, & Williams, 1972). While the effectiveness of many behavior therapy procedures has been substantiated by experimental evidence, there have been few attempts to apply these techniques for the purpose of making individuals less vulnerable to the development of future maladjustments (Poser, 1970). The application of behavioral techniques to the prevention of maladaptive behaviors has recently been recommended by the American Psychiatric Association Task Force on behavior therapy (Birk, 1973). Of particular interest is the role of coping

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strategies in teaching self-management skills to high-risk individuals as a form of behavioral prevention (Meichenbaum, 1975; Suinn & Richardson, 1971). Hopefully, such preventive assistance will contribute to the formation of an immunity or resistance to adverse life events which will help the individual to cope with future psychological stress more effectively (Seligman, 1975).

Detecting Populations at Psychological Risk

The ability to distinguish well from potentially maladjusted persons is a necessary prerequisite for an economically feasible program of behavioral prevention (Poser & King, 1975). Whether an individual will resort to maladaptive strategies for coping with environmental complexity (risk) appears to depend, in large measure, on the interaction of his behavioral coping potential (i.e., his vulnerability or invulnerability) and the stressfulness, complexity, or disruptive nature of his life situation (press). Thus the concept of "press" (Murray, 1938) is used to describe the forces and conditions prevailing in the environment of the person which increase the probability of coping deficits. "Vulnerability", then, refers to the individual's adaptive potential or behavior resources and coping skills. The interaction between press (objective environmental events) and vulnerability (dispositions and capacities of the organism) may therefore predict whether or not normal adaptation will be maintained (risk). Anthony (1974) has provided a similar distinction between risk and vulnerability, albeit in a psychodynamic framework.

The goal of identifying high-risk indicators in individuals who are clinically asymptomatic requires the development and validation of assessment instruments for the large scale screening of persons susceptible to behavior disorder but still functioning adequately.

Phase one of the present project involved the administration of a battery of psychological screening tests to groups of 10th grade high school students in the Montreal area. This was a necessary initial step in the effort to discriminate those adolescents who are optimally adjusted from those who

exhibit behavioral patterns indicating potential maladjustment in the absence of demonstrable clinical symptomatology.

Using both a "nomination" procedure and an adjective check list, each subject was rated by their home room teacher. Teachers were asked to provide a rough three-fold classification of their students by assigning them to an optimally, average, and marginally adjusted category. The same teachers also filled out an adjective check list (Zuckerman & Lubin, 1965) relevant to their students' rating with respect to anxiety, hostility, and depression. The global ratings allowed the teachers to indicate their perception of a student's general psychological adjustment while the adjective checklist provided the teachers with a finer, more sensitive instrument for evaluating students. The anxiety and hostility measures from the scale as well as the three-fold classification served as the criterion variables for investigating the validity of the vulnerability screening tests.

This battery included eight measures, four administered individually and four given as group tests. The individual tests consisted of the Stroop Color Form Conflict Test (Thurstone & Mellinger, 1953), the Dynanometer Test of Persistence (Eysenck, 1947), the Verdun Word Association List (Siegel & Dorken, 1966), and the Body Sway Test of Ideomotor Suggestibility (Eysenck, 1947). The group tests included the Psychological Screening Inventory (Lanyon, 1974), the Rosenberg Self-Esteem Questionnaire (Rosenberg, 1965), a vigilance task with auditory distraction (Eysenck, 1960), and the Rathus Assertiveness Schedule (Rathus, 1973). All of these tests were found useful in previous studies comparing normal and deviant populations.

A stepwise multiple regression computer program (SPSS Subroutine Package) was used for the analysis of the test data. The program introduces the independent variables into the regression equation in their order of importance. The variable entered in each step is that which accounts for the greatest amount of variance between it and the dependent variable. The stepwise regression analysis

indicated that a statistically weighted combination of three measures accounted for the largest amount of variance in the criterion variables ($\bar{R} = .353$). These measures were the psychological discomfort scale from the Lanyon Psychological Screening Inventory, the Rosenberg Self-Esteem Questionnaire, and the Rathus Assertiveness Schedule. Together they identified approximately 25% of the total student sample as potential candidates for a preventive program. This figure is consistent with data from large scale epidemiological studies which repeatedly find between 20 and 30% of an untreated population as being in need of psychiatric attention (Leighton, 1959; Srole, Langer, Michael, Opler, & Rennie, 1963). Using beta weights obtained from the multiple regression analysis, we achieved about the same degree of predictive accuracy as when a priori cut off points were used in a non-weighted equation.

The vulnerability measures demonstrating optimal predictive capability are ones which, conceptually at least, assess those aspects of behavior considered to be pathognomic of future maladjustment. Social skill deficits (Rathus Assertiveness Schedule), inconsistent and impaired self-appraisal (Rosenberg Self-Esteem Questionnaire), and perceived maladjustment with high anxiety (the psychological discomfort scale of the Psychological Screening Inventory) are of considerable theoretical significance for our understanding of the ontogenetic development of certain behavior disorders. The evidence thus far suggests that differential test profiles derived from the above-mentioned measures correlates with predisposition to, or relative immunity from, behavior pathology.

The second phase of this pilot study was an attempt to validate these preliminary results while simultaneously developing additional procedures for evaluating autonomic lability under stressful environmental circumstances (Lader, 1966). The measure employed was the Palmar Sweat Index (PSI) which is a convenient, reliable, and direct physiological measure of autonomic arousal (Venables & Martin, 1967). The technique has been previously used in

psychological stress research with good results (Harrison, 1964). As a discrete measure, the PSI lends itself readily to investigating extinction of the orienting response to repeated presentations of a stimulus. Palmar sweating has been found to increase following the initial reception of excessive noise with adaptation occuring as the organism's neurophysiological system habituates to the stressor after several exposures. In the context of the present study, it was hypothesized that individuals scoring in the high vulnerability range of the test distribution would also display impaired habituation in PSI responding to repeated bursts of white noise.

After the ten minute adaptation period a baseline print is obtained from the middle finger of the subject's left hand. This is followed by the first presentation of white noise (90 db., 1 sec.), a second reading and then four more stimulus presentations with variable inter-stimulus-intervals (70, 80, 60, and 70 secs.), each followed by a PSI print. The sixth palmar sweat print is obtained after the fifth stimulus presentation. Following an adaptation period of five minutes a seventh and final PSI measure is obtained.

Scores from the palmar sweat prints on each trial were subtracted from the subject's baseline reading. These measures were subjected to a group (high and low vulnerability) by trials repeated measures analysis of variance. A significant trials effect ($F = 3.20$, $df = 5/130$, $p < .01$) and a significant group by trials interaction ($F = 2.36$, $df = 5/130$, $p < .04$) emerged. Figure 1 shows a greater magnitude of initial return to baseline levels in the PSI responses of low vulnerability subjects. The response of high vulnerability subjects to stress appears maladaptive -- they are hyperreactive both in initial responsiveness as well as during the recovery phase. They take considerably longer to return to pre-stimulation levels of arousal and then exceed low vulnerability subjects in habituation after a rest period. A deficiency in feedback control (Sternbach, 1966) or defective regulatory mechanisms (Malmo, 1966)

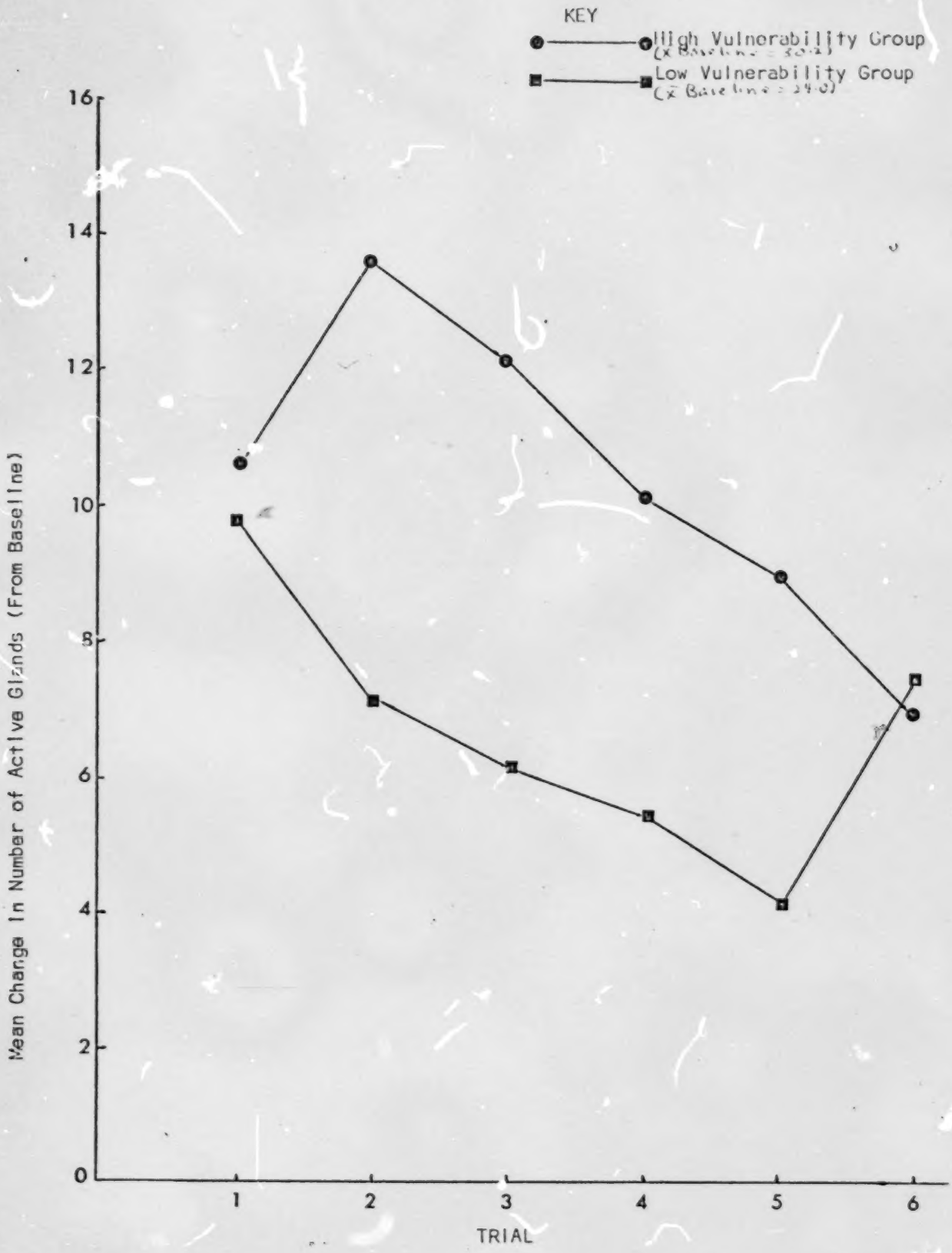

Figure 1. Sweat Gland Activity During Stress Stimulation

(Pre-Intervention)

have been invoked to account for an inability to return to resting or baseline values after stimulation has occurred (Lader & Matthews, 1968; Stoyva & Budzynski, 1974).

The Behavioral Prevention Package

The central tenet of this study is that disorder is the consequence of ineffective coping techniques employed by persons in the attempt to resolve situational life problems. It should be possible to forestall or attenuate the onset of behavior disorder by providing high-risk individuals with skill training and practice in coping with stressful events and situations.

Poser and King (1975) identified five approaches in the recent behavior modification literature with apparent potential for preventive application. These models have been reviewed elsewhere; they include "learned helplessness" (Seligman, Maier, & Solomon, 1971), "stress innoculation" (Meichenbaum, 1975), "anxiety management training" (Suinn & Richardson, 1971), pre-exposure or "stimulus modification" (Poser, Baum, & Skinner, 1970), and modeling or observational learning (Poser & King, 1975). However, few of these procedures have thus far been tested in the context of prevention and none have progressed beyond the analogue stage.

The preventive intervention employed in our research is a behavioral program involving (a) relaxation training, (b) Anxiety Management Training, (c) social skill training, and (d) an opportunity to rehearse and test these coping skills under varied conditions in the treatment setting. This prevention package incorporates a wide array of therapeutic techniques including didactic instruction, modeling-observational learning, discussion, selective social reinforcement, self-regulation, self-evaluation, and coaching.

In the introductory part of the first session of the prevention program, subjects are acquainted with the principles of social learning (Bandura, 1969) stressing a focus on (a) behavior rather than thoughts or feelings, (b) the role

of cognititons in the relationship between stress and emotion (Schachter & Singer, 1962), (c) the advantages of self-management, and (d) the situational specificity of behavior. Following the introduction to behavioral prevention and the planned intervention program, standard deep muscle relaxation training (Jacobson, 1938) is conducted in groups with the assistance of symbolic modeling (i.e., video-recording) of relaxation training with a similar group of high school students.

In the second session, subjects are instructed in the use of imagery to initiate anxiety arousal (Suinn, 1975). Training in the visualization of specific situations which evoke anxiety or relaxation (Suinn, 1974) is followed by practice in switching from scene to scene. Attention to the physical cues of anxiety arousal facilitates rapid termination of an anxiety-inducing scene and immediate instigation of relaxation, assisted by instruction in deep breath control. After training in switching from arousal imagery to relaxation imagery (i.e., responding to anxiety arousal as a cue), the third session which involves actual conditioning is introduced. Here the individual is relaxed, anxiety is aroused, then terminated through the deep breath control signal, followed by an immediate shift to the relaxation response. During anxiety arousal in the conditioning procedure, the subject is instructed to attend to the stimulus qualities of anxiety (i.e., the way in which the anxiety is expressed) while permitting it to develop to a high level. This procedure of pairing anxiety arousal with anxiety control provides self-management training in the control of anxiety, regardless of its origins.

The final session of the prevention program focuses on the social performance difficulties arising from (a) maladaptive anxiety which inhibits the performance of appropriate responses already in the person's social skill repertoire; and (b) behavioral skill deficits (responses not available to the individual) which are necessary for competent social performance. This session involves modeling, discussion, role playing, feedback, and coaching of problem situations and social skill deficits frequently identified by high vulnerability subjects on the Rathus Assertiveness Schedule.

In order to evaluate the program's efficacy, subjects were randomly assigned, within each group (i.e., high and low vulnerability), to a preventive intervention (PI) or no-intervention control (NIC) condition — subject to the restriction that the number of males and females in each condition be equal. PI subjects received four sessions of the behavioral prevention package followed by post-intervention assessment. Subjects in the NIC condition received no intervention but were administered all post-intervention assessments after an interval identical to that for the experimental intervention group.

This intervention program (which teaches coping and social performance skills and then provides application training) must demonstrate its ability to attenuate the cluster of test behaviors which presage future disorder if it is to establish itself as an effective agent of prevention. Thus dependent measures consist of retest scores on the same assessment battery originally employed to identify subjects at psychological risk.

Evidence for the efficacy of a coping skill acquisition procedure for the preventive attenuation of behavior disorder is now being collected and results will soon be available. The following experimental hypotheses will be considered in the analysis of the outcome data.

(1) Students found to be at risk and receiving preventive assistance should do better on all measures than those who receive no intervention.

(2) The relative magnitude of change in test performance following preventive intervention should be greatest in high-risk subjects.

(3) Subjects low in risk and receiving preventive assistance should not differ significantly from those receiving no intervention.

(4) High-risk subjects not receiving preventive interventions should display a higher incidence of post-intervention vulnerability than low-risk subjects.

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